

1 RANDOMIZED SUPERPIXELS TO ENHANCE MULTILEVEL IMAGE QUALITY
2 IN ECONOMICAL, FAST INCREMENTAL-PRINTING ERROR DIFFUSION

3
4
5 ABSTRACT OF THE DISCLOSURE
6

7 While powerful in diffusion at one resolution to
8 print photos at a finer resolution, the invention is not
9 thus limited. It defines superpixels ("spels") for each
10 desired colorimetric level, generates/receives image data,
11 renders by finding levels for image positions, and prints
12 an image using selected spels. One invention aspect finds
13 a randomized value at each found level and uses the value
14 to select the spel from plural ones for each level.
15 Another aspect derives/maintains a randomized-value ma-
16 trix; and maps a matrix location to an image position, to
17 select a random value at that location and spel for that
18 position. Another uses the value in common for all planes
19 to select a spel for each plane at the found level — com-
20 patible spels for different planes, to coordinate color
21 placement in planes. Another controls defining/selecting
22 for a blue-noise property of spels in aggregate. In
23 another, spels defined for a level vary in value to yield
24 nonintegral color quanta. Preferences: Rendering is 1D
25 per color, plus a dummy dimension holding the value (a
26 least-significant bit from rendering, in a color dimension
27 but decorrelated from levels) — and derives/maintains the
28 matrix, derived/corrected for blue noise and including
29 small interleaved 1D matrices tiled across and wrapped
30 around the larger. Mapping uses values as pointers into
31 dimensions of a spel table, and color-plane identification
32 as a pointer into a third table dimension; it uses a com-
33 mon value in all planes to avoid drop-on-drop. Spels are
34 Fourier-screened.